

What is claimed is:

1. A system for communicating information between a downhole location in a wellbore and an uphole location, comprising:

- a. a first device disposed at one of said downhole and said uphole locations, said first device including a transmitter for transmitting a first signal;
- 5 b. a second device disposed at the other of said downhole and said uphole locations, said second device including a receiver for receiving a second signal; and
- c. at least one repeater disposed at a predetermined location in a wall of the wellbore, said repeater comprising a receiver for receiving said first signal and a transmitter for transmitting said second signal, wherein said second signal is indicative of said first signal.

10 2. The system of claim 1, wherein the repeater comprises:

- a. a receiving device;
- 15 b. an electronics module;
- c. a transmitting device; and
- d. an energy source.

20 3. The system of claim 2, wherein the electronics module comprises circuits, a

processor, and memory, said processor acting according to programmed instructions in said memory, for controlling the operation of the repeater.

4. The system according to claim 2, wherein the energy source is one of (i) batteries, (ii) a thermoelectric generator, and (iii) a combination of batteries and a thermoelectric generator.

5 5. The system of claim 1, wherein the repeater is adapted to receive and transmit a plurality of frequencies.

6. The system of claim 1, wherein the predetermined location is between said downhole location and said uphole location.

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7. The system of claim 1, wherein said uphole location is a surface location.

8. The system of claim 1, wherein the repeater includes at least one sensor for detecting at least one parameter of interest related to a downhole condition.

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9. The system of claim 8, wherein the at least one sensor is at least one of (i) a pressure sensor, a temperature sensor, a resistivity sensor.

10. The system of claim 8, wherein the at least one parameter of interest includes (i) 20 wellbore fluid pressure, (ii) wellbore fluid temperature, (iii) wellbore fluid resistivity (iv) formation fluid pressure (v) formation fluid temperature, and (vi) formation fluid resistivity.

11. The system of claim 1, wherein the first signal and the second signal are at least one of (i) an electromagnetic signal, (ii) a radio frequency signal, and (iii) an acoustic signal.

12. The system of claim 1, wherein the first signal and the second signal are at least two of (i) an electromagnetic signal, (ii) a radio frequency signal, and (iii) an acoustic signal.

13. The system of claim 8, wherein at least one of the first signal and the second signal includes data related to the at least one parameter of interest.

10 14. A method for communicating information between a downhole location in a wellbore and an uphole location, comprising:

- a. disposing at least one signal repeater at a predetermined location in a wall of the wellbore;
- b. transmitting a first signal from a first device located at one of said uphole location and said downhole location;
- c. receiving said first signal at the at least one repeater, said repeater transmitting a second signal indicative of said first signal; and
- d. receiving said second signal at the other of said uphole and said downhole locations.

20 15. The method of claim 14, further comprising sensing at least one parameter of interest by a sensor disposed in said at least one repeater.

16. The method of claim 14, wherein the at least one repeater is disposed in the wall of
the wellbore by an explosive charge.

5 17. The method of claim 14, wherein the at least one repeater is disposed in the wall of
the wellbore by a hydraulic piston.

18. The method of claim 14, wherein the at least one parameter of interest includes (i)
wellbore fluid pressure, (ii) wellbore fluid temperature, (iii) wellbore fluid resistivity (iv)
10 formation fluid pressure (v) formation fluid temperature, and (vi) formation fluid
resistivity.

19. The method of claim 14, wherein the first signal and the second signal are at least
one of (i) an electromagnetic signal, (ii) a radio frequency signal, and (iii) an acoustic
15 signal.

20. The method of claim 15, wherein at least one of the first signal and the second
signal include data related to the at least one parameter of interest.

20 21. An apparatus for boosting signals in a communication system in a wellbore,
comprising at least one repeater disposed at a predetermined location in a wall of the

wellbore, said at least one repeater receiving a first signal and transmitting a second signal, wherein said second signal is indicative of said first signal.

22. The apparatus of claim 21, wherein the repeater comprises:

- 5 a. a receiving device;
- b. an electronics module;
- c. a transmitting device; and
- d. an energy source.

10 23. The apparatus of claim 22, wherein the electronics module comprises circuits, a processor, and memory, said processor acting according to programmed instructions in said memory, for controlling the operation of the repeater.

15 24. The apparatus according to claim 22, wherein the energy source is one of (i) batteries, (ii) a thermoelectric generator, and (iii) a combination of batteries and a thermoelectric generator.

25. The apparatus of claim 21, wherein the repeater is adapted to receive and transmit a plurality of frequencies.

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26. The apparatus of claim 21, wherein the predetermined location is between said downhole location and said uphole location.

27. The apparatus of claim 22, wherein the repeater further comprises at least one sensor for detecting at least one parameter of interest related to a downhole condition.

5 28. The apparatus of claim 27, wherein the at least one sensor is at least one of (i) a pressure sensor, a temperature sensor, a resistivity sensor.

10 29. The apparatus of claim 27, wherein the at least one parameter of interest includes (i) wellbore fluid pressure, (ii) wellbore fluid temperature, (iii) wellbore fluid resistivity (iv) formation fluid pressure (v) formation fluid temperature, and (vi) formation fluid resistivity.

15 30. The apparatus of claim 21, wherein the first signal and the second signal are at least one of (i) an electromagnetic signal, (ii) a radio frequency signal, and (iii) an acoustic signal.

20 31. The apparatus of claim 21, wherein the first signal and the second signal are at least two of (i) an electromagnetic signal, (ii) a radio frequency signal, and (iii) an acoustic signal.

32. The apparatus of claim 27, wherein at least one of the first signal and the second signal includes data related to the at least one parameter of interest.